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ABSTRACT

This combined report provides cost analyses of four strategies for improving child success and retention in South African junior primary schools, and for eight community-based preschool day care (educare) options. The junior primary school cost analyses utilize the Assessing Policies for Educational Excellence (APEX) computer model to make projections for the year 2000 based on 1990 costs, while the educare analysis uses a Lotus spreadsheet. First, a basic cost projection is presented based on the assumptions that compulsory schooling for all African children will be introduced and some progress will be made toward equalizing resource allocation between schools. The four educational strategies assessed are: (1) the Bridging Period Programme, a school readiness program within the first year of school; (2) the Junior Primary Upgrading Programme option, a coordinated program to upgrade junior primary schools beginning with the most deprived; (3) the Preprimary Class Option, which opens early learning opportunities to African and coloured children; and (4) the Integrated Junior Primary Option, which follows the British Infant School model. The four strategies are assessed in terms of enrollment patterns; recurrent costs; classroom facilities; and materials expenses. The educare report includes cost data for full-day educare centers; home-based educare; part-day preprimary classes, preschool centers, and outdoor playgroups; and family education programs, including educational home visiting, parent-and-child groups, and parent training programs. (AC)

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NATIONAL EDUCATION POLICY INVESTIGATION

EARLY CHILDHOOD EDUCARE RESEARCH GROUP

COSTINGS OF DIFFERENT PROGRAMME OPTIONS FOR JUNIOR PRIMARY UPGRADING AND COMMUNITY-BASED EDUCARE PROVISION

by

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Statistical Assistance provided by Nicolette Patchett

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JUNIOR PRIMARY SCHOOL UPGRADING OPTIONS

Ann Short

Background information

Aim: To prepare children for school and reform/transform the junior primary school to overcome the problem of the high Sub A/Grade 1 failure rate and wastage caused by high repetition and drop-out rates before children have achieved functional literacy. This means providing a sound early grounding to prevent the huge failure and drop-out in Std 3.

Four potentially effective programmes/strategies have been identified which may be implemented within the primary school system. Two of these relate to preparation for formal instruction, and two to upgrading of the junior primary school as a whole. There are possibilities for various combinations and different time scales.

(a) **Preparation for school:** The essential difference between the two programmes is that one is designed for implementation within the first year of school beginning at age 5.5 years and including only those children who are not ready for formal instruction, while the other is a preprimary preparatory year for five-year-olds. The first is based on the **Bridging Period Programme (BPP)** concept and is regarded as a short-term strategy to make schools more responsive to the needs of children. There are a number of ways the second **preprimary class** programme could be phased in rapidly at relatively low cost.

(b) **Junior primary upgrading:** Programmes are needed to address the problems of overcrowding, poor teacher-pupil ratios, upgrading the physical environment and material resources, improving teaching competence, and the introduction of compulsory schooling for African children. Two possible models are the **Primary Education Upgrading Programme (PEUP)**, which includes automatic promotion to ease congestion in the early grades, and the **British Infant School** with school entry at age 5 years and a flexible promotion policy so that children could progress to the end of Std 1 in 3 or 4 years. This option would absorb the preprimary class.

Method

An attempt has been made to assess the effect on the total school costs of introducing the preparatory and upgrading programmes outlined above using the APEX computer model. It has been assumed that any new programme would be phased in over time and would only be fully operational after 10 years. The projections are based on 1990 costs, so one is looking at possible costs in the year 2000. It is important to consider the costs of different junior primary options in relation to the whole school system, because one of the effects is to move more children into the secondary school, so that cost increases do not only occur at the junior primary level.

In order to compare the relative costs of the proposed junior primary upgrading options over time, it is necessary to have a baseline scenario which assumes a realistic level of change that

would occur without any specific intervention in the junior primary school phase. This level of change can be determined by general trends in the past plus efforts to bring about a more equal system in terms of current bureaucratic thinking.

The APEX (Assessing Policies for Educational Excellence) model has certain limitations regarding this type of fine-grained comparison, and therefore the results need to seen as giving only a general indication of possible costs in the year 2000. Difficult projections have to made regarding future enrolment patterns for each option, and these could well prove to be unrealistic. Furthermore, certain assumptions have been hard-wired into the APEX model, which are not fully compatible with the assumptions made here, such as the provision for initial teacher training to include two years of internship (at a low salary), and the fact that 'underqualified' teachers (Std 8 + 2 years training) are all upgraded and cannot be kept in the system. Compensations have been made for these kinds of problems as best we can, but distortions may occur in the results.

One of the assumptions underlying all the following projections is that in practice in the short to medium term the majority of schools will remain predominantly segregated because of their location in previously segregated residential areas and language differences, or rather that regardless of the racial composition of pupils, the present characteristics of schools in terms of ratios and staffing will change slowly. Therefore, references to 'white' schools or 'African' schools will be used to differentiate between schools of different standard. The results will also be presented to show improvements in the enrolment of children by race group.

1. BASIC PROJECTION

Levels:	Junior primary:	SSA - Std 1	(3 years)
	Senior primary:	Stds 2 - 5	(4 years)
	Junior secondary:	Stds 6 - 8	(3 years)
	Senior secondary:	Stds 9 - 10	(2 years)

For comparative purposes, the basic projection assumes that compulsory schooling for all African children would be introduced and some progress would be made towards equalising resource allocation between schools that have been run by the different departments in the past.

The introduction of compulsory schooling alone will increase the proportion of the school budget spent on the junior primary phase (to the end of Std 1) because an estimated 30 per cent of six-year-olds are not yet in school as well as a number of older children. If compulsory schooling is effectively implemented, the drop out in the early years should cease, but repetition rates will remain high. The enrolment of African children in the junior primary years could increase by over a million children by the year 2000, which is 36 per cent against a population increase of 28 per cent.

Enrolment patterns by the year 2000

The basic assumptions in relation to the position in 1990 are:

- There will be minimal change for white and Indian children, having reached more-or-less optimum, but there will be a small percentage increase in senior secondary school (Stds 9-10) enrolments.

- Coloured enrolments show a small improvement with more children moving through the system mainly through reduction in repetition rates - shift from primary to secondary and increase in the number completing Std 10.

- African enrolments will be affected in two ways: gradual incorporation of almost all younger children (6-13 years) in the school system through the institution of compulsory primary schooling, which will maintain the junior primary bulge, and an improvement in secondary school enrolment in real numbers (similar to the Coloured pattern in the 1980s).

Intake rates in SSA (Sub-Standard A) were all slightly more than 100 per cent of the six-year-old population in 1990.

- There does not appear to be any good reason why these should change for coloured, Indian and white children except by administrative fiat. This means that five-year-olds are being taken in above the 'normal quota'.

- The intake rates for African children will have to increase to effect compulsory schooling by bringing in all six-year-olds by the year 2000. This does not mean that the problem of younger children being admitted will be solved. The implications for more classrooms are considerable.

Repetition rates in SSA are currently 30% for African and 28% for coloured children.

- SSA repetition will decrease only marginally for African children and slightly more for coloured children - because this is determined mainly by 'non-school' factors such as 'lack of readiness' (partly due to lack of preprimary provision).

Possible projections for year 2000:

	African	Coloured	Indian	White
Intake	113%	103%	103%	103%
Repetition	25%	20%	2%	5%

Capital costs

Training: The following assumptions have been made:

- In terms of current policy aimed at reducing costs these will decrease by 2000, and will be equalised at about R10 000 per student per annum.

- Initial pre-service training for all primary school teachers in colleges will remain 3 years (as in African and coloured teacher training), which will further reduce costs; the model provides for a certain specified percentage to be upgraded to 4 years.

- For secondary teachers, initial pre-service training will remain 4 years.

- The pre-service model will remain unchanged.

Building: Classroom costs likely to be reduced (to R40 000 for primary and R45 000 for secondary).

Recurrent staff costs

Pupils/teacher ratio: Ratios will change as a means of redistribution, but equalisation will not be achieved by 2000; white and Indian schools will also maintain better ratios through fees, but only state-supported ratios have been costed - see Table 1.

Teacher qualifications: Unlikely to change in a substantially 'negative' direction for white and Indian schools; proportions of higher qualified teachers will improve for African and coloured in both primary and secondary, but 'underqualified' (Std 8 + 2) teachers will not be eliminated from the system.

Teachers/administrator ratio: Some progress towards equalisation, but African schools still higher than the rest (15 vs 10).

Salaries will not increase above the rate of inflation, with the exception of senior secondary school teachers; likely to lose better qualified teachers

Benefits are included in salary costs and 'underqualified' receive considerably less in the form of benefits.

Inservice teacher training: Included as 'teacher-driven' costs in APEX and calculated as a proportion of total staff costs, which is equalised by the year 2000.

TABLE 1: Basic projection: Pupils per teacher and classroom

	Pupils per teacher		Pupils per classroom	
	Primary	Secondary	Primary	Secondary
African	40	30	45	35
Coloured	30	25	35	35
Indian	30	25	35	35
White	30	25	35	35

Other recurrent costs

Pupils/classroom ratio: Some progress towards equalisation, but African schools will still be higher as shown in Table 1.

Texts/pupil: 'Equalisation' will be achieved but secondary will be better resourced (per pupil) than primary. The cost of texts for primary is less than for secondary as well.

Other expenses: These include expenses per classroom, which will be equalised, and materials expenses per pupil covering teaching aids, supplies and equipment. In the latter case, secondary will be better resourced than primary. Overhead costs relating to facilities (electricity, maintenance, etc.) and materials (e.g. distribution) are calculated as a percentage of all physical costs and this is equalised.

Health and nutrition costs: No general input.

The actual inputs into the APEX model for the Basic Projection to the year 2000 are listed in Appendix 1.

1. BRIDGING PERIOD PROGRAMME (BPP) OPTION

The Bridging Period Programme (BPP) is a school readiness programme provided within the first year of school for those children who need it. During the first 3 weeks in SSA/Grade 1 (the Orientation Period), children's school readiness is assessed and they are divided into three groups: those who are ready for formal schooling begin formal instruction immediately; those who are almost ready participate in a 10-12 week school readiness programme, and those who are not ready participate in the Bridging Period 'play-based' preparation programme for the remainder of the year, beginning formal instruction (SSA/Grade 1) in their second year. It is theoretically possible for children to shift between streams (see Taylor 1992 for a detailed description and assessment of the BPP).

- Programmes like the BPP attempt to address the SSA failure rate directly but in fact do not reduce the length of time children spend in school - children in the bridging class still spend two years in SSA.

- Its value lies in making teachers more ready for children in terms of being able to cope better with children who are not ready for formal instruction provided that
  - the curriculum is thoroughly reviewed in favour of a more child-centred, process-oriented approach based on 'progressive' early literacy and numeracy teaching methods rather than inappropriate remedial methods, and
  - teachers are offered ongoing inservice training in the new methodology.

  An underlying assumption of this strategy is that children from deprived backgrounds who are not ready for school are in need of remedial-type education, which is questionable. It reflects the 'deficit' model (on which the early compensatory education programmes for 'culturally deprived' children were based) which has been severely criticised. The majority simply need an opportunity to catch up with those who have been exposed to the kind of experiences the school expects. (See Short, 1985: 65-75, and Taylor, 1989: 26-32 for further discussion of this issue.)

- Because the BPP makes schools somewhat ready for children, it could be a stop-gap, low-cost measure which may reduce later repetition to some extent. It is intended by DET to serve the roughly 30% of children who fail and repeat SSA.

- The concept is only really viable in the present fairly formal system, however, if schools can use at least one classroom for the BPP because it is play-based. This has some interesting implications especially for white and Indian schools. If all schools are permitted to use the BPP, then children above school-going age (5.5 years) who are not ready for school can be admitted to primary school. At present this practice is not encouraged in white and Indian schools. This could result in more children entering the school system and could be regarded as an alternative to a full preprimary programme.

- BPP does not address the problems of congestion, inadequate facilities, the junior primary curriculum as a whole and inappropriate teaching methods, and under-age enrolment.

The costing assumptions for this option will only be described insofar as they differ from the Basic Projection.

Enrolment patterns

We need to know how many five-year-olds are entering the system now (1990). My guess is that it is probably around 20% in all groups. Most of these white and Indian five-year-olds are school ready and proceed to SSB when they are still six. In the case of the coloured and African children, a number will proceed and the rest will repeat SSA. If this is a reasonably accurate picture, then one can make the following assumptions:

- White and Indian schools will use available extra classroom space to provide a bridging programme for approximately 30% of five-year-olds who are 'not ready for formal instruction' but eligible for school entry (at least 5.5 years old). This will not really influence school progress (because most white and Indian children are already in preprimary programmes - just shifting the location - which may not be too desirable).

- Coloured schools will also be able to increase their intake of 'unready' five-year-olds but at a much slower rate. School progress (survival rate) should improve slightly on the Basic Projection.

- African schools will maintain a SSA repetition rate at 30%, and survival rates will be slightly better than in the Basic Projection.

Recurrent costs

The only other costs involve provision of inservice training for SSA teachers and more materials for the bridging classes. This is reflected specifically in the following:

- the appointment of additional junior primary advisors resulting in an improved teachers/administrator ratio (14:1) for African schools;
- the proportion of staff costs allocated for the inservice training of African and coloured teachers is increased (from 7 to 8%) for the junior primary phase;
- materials expenses per pupil are increased for the junior primary.

2. JUNIOR PRIMARY UPGRADING PROGRAMME (JP/UP) OPTION

A systematically planned and coordinated programme is introduced to upgrade the junior primary schools where necessary and beginning with the most deprived schools. The PEUP developed in Bophuthatswana provides a model that includes

- enforcement of minimum school entry age (5.5 years),
- reduction in class size,
- improved teacher-child ratios,
- improved physical environment, including educational materials,
- almost automatic promotion to Std 4 to ease congestion,
- involvement of parents, particularly in upgrading the physical environment
- inservice training of teachers.

Transformation of the junior primary schools is required if any real progress is to be made. PEUP appears to have achieved considerable success in Bophuthatswana (Donaldson, 1992, p.314), and has the additional advantage of being a locally tested model. Redress can be built in by targeting the most deprived schools first.

- It is not incompatible with the BPP in that it also assumes that not all children are school-ready on entry to school. The teaching methodology is different, being more child-centred and activity-based so that children are not divided into groups as in BPP, which has important implications for classroom usage and organisation.

- One area of concern with the PEUP model could be the automatic promotion policy, which may need further evaluation, but it is the key element to cost reduction.

- Research also suggests that the programme would be strengthened by encouraging and assisting parents to play a more supportive *educational* role in the home, and by introducing low-cost programmes for enriching and supplementing the education of very disadvantaged children (Short, 197; Taylor, 1989).

In costing this JP/UP option it seemed possible to build on the BPP option (1) so that only changes in relation to the Basic Projection and/or Option 1 will be identified.

Enrolment patterns

Intake rates would be the same as for Option 1 so that gradually all children from 5.5 years are included in the system - but one is working towards the intake being aged 5.5 - 6.5 years in SSA.

SSA repetition rates: By combining ungrading with the bridging class option, allowance is being made for the fact that about 30% of the intake will not be ready for school and they will participate in the preparatory bridging programme. This would allay some of the concern about automatic promotion. (In PEUP there was no bridging option.) The bridging class effectively spends two years in SSA, but then automatically proceeds to SSB along with the rest of the SSA pupils.

Survival rates: The assumption is that children will proceed almost automatically through the junior primary grades into the senior primary and up to Std 3 when a fair number will fail and repeat; the vast majority will complete primary school, and increased numbers of African and coloured children will complete secondary school. Slightly more Indian and white pupils will also reach the senior secondary school.

(In Bophuthatswana 75% attained Std 7 in 1990 and 35% attained Std 10.)

Recurrent costs

The increases in costs for this option are fairly substantial because all junior primary classes are upgraded and some improvement is needed in senior primary schools. Expenditure relates to staff costs and to physical costs.

Pupils/teacher ratio: This will change for African children in the junior primary to 30 pupils per teacher and in the senior primary to 35 pupils by 2000, which will require more teachers to be trained and increase staff costs.

Teachers/administrator: 12:1 for African schools to provide better support services and inservice training for all primary school teachers.

Inservice training costs: Increased to 10% of staff costs for African and coloured schools to ensure adequate provision.

Pupils/classroom ratio: 40 African children per primary classroom, which would require more classrooms.

Classrooms: Existing facilities are also upgraded, especially in African schools and probably in coloured rural schools, and classroom expenses have been increased throughout the primary school (assuming secondary schools are in a better state).

(In the Bophuthatswana programme, parents were responsible for classroom upgrading.)

Materials expenses: Increased for all groups in primary school to equalise with secondary school expenditure.

There is probably a stronger assumption in this option that all parents would contribute at all levels, whereas in the Basic Projection it may be more likely that parents only contribute in suburban/state-aided schools. Parental contributions could off-set much of the cost of upgrading the physical facilities.

3. PREPRIMARY CLASS OPTION

Options 1 and 2 attempt to cope with children entering school who are not school-ready in order to reduce the SSA failure rate and improve scholastic progress. Neither option addresses the need to provide early learning opportunities for children before school entry age. **The preprimary class option is essentially an alternative to the BPP option which**

gives African and coloured children a chance to prepare for school at the same age as white and Indian children (instead of starting a year or more later). As already noted, most white and Indian five-year-olds already have access to some form of preprimary programme.

The costing is for a fully subsidised (salaries and equipment) one-year preprimary programme for all five-year-olds provided in primary schools. This results in an increase in capital costs which could be reduced by using only available classrooms, existing preprimary schools, community halls, etc. As repetition rates are reduced (as well as population growth rates) more classroom space could become available in the schools (may be related to location), but careful planning will be needed to identify where additional classrooms should be built.

- Preprimary classes will equalise and increase access to early educational opportunities, especially for African and coloured children, within a reasonable period and at a reasonable cost (in comparison with conventional preprimary schools).

- The classes could greatly relieve congestion in SSA classrooms because admission to SSA before the age of 6 years may be refused if there are space problems and pre-primary class facilities exist.

- Admission of children into school-based programmes before the age of five is not recommended (Osborn & Millbank, 1987), and the age of admission to the preprimary class will have to be clearly defined, e.g. must turn five before the 31 January or 31 March.

- The preprimary year is not compulsory. Therefore, not all parents will choose to enrol their five-year-olds.

- The preprimary class will act as a transition to formal school and promote continuity if teachers are trained in progressive preprimary methods. Local research has shown that for less disadvantaged children, one year of preprimary education can have significant long-term scholastic benefits for children from less disadvantaged homes (Short, 1987).

- However, the effectiveness of preprimary education is reduced considerably if the school system is rotten and continuity does not exist. Therefore, the provision of preprimary programmes must be associated with primary school upgrading to be maximally effective.

- There is concern that the establishment of preprimary classes within the primary school could result in the extension of formal schooling downwards. Five-year-olds are generally ready, physically and emotionally, for a somewhat more structured programme, but there is a strong body of opinion that formal group instruction is not appropriate at this age (and up to around eight).

This programme could be phased in rapidly in the following ways:

- double session classes (2-3 hour programmes are sufficient);
- use of SSA classrooms after hours could be extended to many more five-year-olds in the short-term; the short duration reduces salary costs; non-formally trained teachers,

who are less expensive to train, may be used;
- could use SSA teachers as well (inservice training required and possible adjustment of school hours.

Double sessions are used in a number of countries, including Australia, Canada, USA, Sweden, West Germany and Hong Kong, and would certainly reduce costs considerably. In India where Grade 1 classrooms and teachers are used for second session preprimary classes, the Grade 1 session is shortened. Nevertheless, the double session option, either in preprimary classes or after hours in SSA classes, is probably not a long-term solution to the cost problem because the middle of the day is not good time for learning, especially if children are not eating and sleeping properly. In the the SSA classrooms there may be problems of sharing premises with regard to equipment and materials.

Children participating in the bridging programme would now be part of the preprimary class, and children could be enrolled from the age of five years. In every other respect, the JP/UP option (2) is also part of this option.

Levels: The junior primary now includes the preprimary year up to Std 1 and lasts 4 years. It should also have its own accommodation if part of a large urban primary school so that the fives do not share the same playground as the senior primary children.

Enrolment patterns

By the year 2000 it is assumed that an estimated 20% of 5-year-olds (or younger) are already entering SSA (Basic); the BPP option (1) includes up to an additional 30% of five-year-olds in the junior primary, and the JP/UP option (2) targets the inclusion of all those from 5.5 years (50%). So this option really only adds 50-60% (at most) of the five-year-old age cohort to the school system.

Table 2 shows the 1990 enrolment of all children in preprimary classes (which seem to include some 4-year-olds) and five-year-olds in subsidised preprimary schools to give the total number of five-year-olds. The balance of under-fives in preprimary schools is also included in the table.

TABLE 2: 1990 Enrolment of Five-year-olds in Subsidised Preprimary Classes and Schools (Centres)

	African	Coloured	Indian	White
Classes	4 200	7 350	12 700	6 000
Centres	41 500	7 164	1 030	23 000
Total fives	45 700	14 500	13 700	29 000
Under-fives	53 536	10 745	1·540	20 400
Total	99 200	25 200	15 300	49 400

The number of five-year-olds in preprimary schools is based on an estimated proportion of the total number. There are discrepancies among the various sources because some do not include schools, whereas others include all registered preprimary schools, whether state-subsidised or not. There are considerably more African, coloured and white five-year-olds attending preschools that receive no state support.

The full enrolment in subsidised preprimary schools is included because these children were receiving state support in 1990, and it could be argued that places occupied by under-fives could in future be used for five-year-olds. This trend is already happening in white preprimary schools.

Intake rates:

- By 2000 provision in preprimary classes should be available for 80% of 5-year-olds. It is assumed that the remaining 20% are either in SSA or at home (parental choice).

- The intake of five-year-olds would effectively reduce the intake of six-year-olds to 100% by 2000 for coloured, white and Indian, but in the case of African children there has to be a parallel intake of six-year-olds into SSA up to the year 2000 as in the previous options.

Survival rates: The automatic promotion policy now becomes more viable, so that survival rates should improve throughout the primary school, relieving congestion, especially in the junior primary, but it is not clear whether one can expect greater improvement than with JP/UP. It is possible that the beneficial effect will be immediate for coloured children because all sixes are already in school, whereas the African primary schools will only really improve in the next decade.

(It is not clear what the educational assumptions and consequences are of 'automatic promotion' policies. According to Donaldson (1992), almost all (92%) Bophuthatswana children complete primary school. Logically, one might assume that children with a poor educational background would begin to fail and possibly drop out in senior primary, whereas those who have had the preprimary year would have a better foundation and fail less often.)

Recurrent costs

Pupils/teacher ratio: In the preprimary classes the ratio should not exceed 25:1, which means an overall junior primary ratio for coloured, Indian and white schools of 29:1, and for African schools of 30:1.

Pupils/classroom: It is proposed that the preprimary classrooms be staffed by preprimary-trained teachers and assistants, which affects the pupils/classroom ratio.

Coloured, Indian white = 33
African = 40

In practice, lower cost preprimary options may be needed to extend access to 80% of five-year-olds by the year 2000:

- Double sessions would reduce the number of classrooms by half and would involve

doubling the pupils/teacher and pupils/classroom ratios for the preprimary year.

- SSA classrooms are already being used in local Indian schools, which requires no additional classroom space and the 2-hour preprimary programme is run by 'community teachers' who receive a wage subsidy.

4. INTEGRATED JUNIOR PRIMARY OPTION

This option involves the gradual conversion to an integrated 3-4 year junior primary school programme for children from the age of 5 years (as in the British Infant School model) as teachers become sufficiently trained and physical facilities improved. Schools could be given the freedom to restructure as and when they feel able to do so, and NGOs could provide inservice teacher training and material support to assist schools make these changes. This would incorporate all the above options.

The integrated infant school model for 5-9 year-olds is compatible with, and incorporates, all the above programmes, but has the additional advantage of flexible promotion. Because children begin learning to read, write and calculate as soon as they are ready and progress at their own pace (individualised versus group teaching), some will complete the junior primary in 3 years, while those who need more time can take 4 years without repeating a standard. It could either be viewed as a fourth stage in the upgrading process or as the alternative to all the above.

- The flexible promotion policy addresses concerns about the PEUP automatic promotion policy, but also has the advantage of not 'failing' children during the early years.

- In contrast with the BPP model, which also has children completing Std 1 in 3 or 4 years, all children will have the opportunity of starting at the age of 5.

- If children are not allowed to enter before age five, then effectively the school system is being required to add only half an age cohort as for option 3, but this option should be less costly (because only some will spend 4 years in the junior primary).

School organisation would need to change to accommodate the flexible promotion policy so that there would not be four distinct grades - possibly only two. In contrast with the other options, this one has been costed to equalise standards across all race groups by the year 2000.

Enrolment patterns

All children enter school from the age of 5, but this could be voluntary at first.

Rates of progression: The costing is based on the assumption that 70% of African, 50% of coloured and 30% of Indian and white children will complete the junior primary phase (Std 1) in 4 years and the rest will take only 3 years. This will result in fewer children in the school system than in option 3.

Capital costs

Training: This option costs pre-service training for junior primary teachers for two years (M+2) with upgrading to M+3 at the end of two years practical internship. It also includes, in theory, teaching assistants trained at the secondary level (Std 8+2) to reduce the pupil-teacher ratio (but the APEX model makes it difficult to differentiate between these two levels of training so the capital cost of pre-service training (2 years) is the same).

Recurrent costs

Pupils/teacher and classroom ratios: The main difference between this option and previous options is the provision for a teacher and assistant working with 40 children per classroom in the junior primary, so that it is more economical on classrooms but employs more teaching staff (20 children per adult).

At all other levels pupils/teacher ratios are equalised at 30:1 (which is better than the ERM projections) and pupils/classroom are equalised at 35:1.

Teachers/administrator ratios are equalised across race groups at 10:1, and inservice training costs are kept higher for the junior primary level (10%).

Materials expenses: Upgrading of existing primary school physical facilities is costed as in options 2 and 3, and materials expenses are the same for primary and secondary. The only change is equalising the number of texts per pupil for primary and secondary education.

Health and nutrition: An amount of R75 per pupil is included for feeding schemes for schools serving needy children.

COMPARISON OF THE OPTIONS

In comparing the various options, one needs to look at the enrolment patterns as well as the actual costs.

School enrolment in the year 2000

Table 3 shows the enrolment for each phase of the school system for each race group and the total school population. The number of children participating in some form of preparatory programme is shown separately but included in the junior primary total.

TABLE 3: Enrolment (in 1000s) Patterns by Race Group

3.1 AFRICAN	BASIC	BPP	JP/UP	PREP	INTEG
Preparatory	-	490.0	496.9	833.9	729.7
SSA-Std 1	4038.3	3496.8	3377.2	3414.6	3227.2
Junior Prim	4038.3	3986.8	3874.1	4248.5	3956.9
Stds 2-5	3728.8	3821.1	3615.9	3666.6	3469.8
Stds 6-8	1861.5	1912.6	2059.7	2092.1	2142.5
Stds 9-10	734.1	749.6	901.4	906.6	915.7
Total	10362.7	10470.1	10451.2	10913.9	10484.9

TABLE 3.2

COLOURED	BASIC	BPP	JP/UP	PREP	INTEG
Preparatory	-	37.2	37.2	63.2	39.5
SSA-Std 1	294.3	274.7	264.7	240.8	242.8
Junior Prim	294.3	311.9	301.9	304.0	282.3
Stds 2-5	334.9	333.8	327.0	306.8	316.9
Stds 6-8	197.6	203.1	208.4	216.1	221.1
Stds 9-10	74.2	78.8	92.8	99.6	99.5
Total	901.0	927.6	930.1	926.5	919.8

TABLE 3.3

INDIAN	BASIC	BPP	JP/UP	PREP	INTEG
Preparatory	-	6.2	6.2	16.5	6.2
SSA-Std 1	64.1	62.5	62.5	62.4	62.4
Junior Prim	64.1	68.7	68.7	78.9	68.6
Stds 2-5	83.5	82.3	82.0	81.9	82.9
Stds 6-8	60.9	60.8	60.7	60.7	61.4
Stds 9-10	31.7	31.9	32.5	32.5	32.6
Total	240.2	243.7	243.9	254.0	245.5

TABLE 3.4

WHITE	BASIC	BPP	JP/UP	PREP	INTEG
Preparatory	-	25.5	25.5	68.0	25.5
SSA-Std 1	262.6	252.8	254.4	253.3	254.2
Junior Prim	262.6	278.3	279.9	321.3	279.7
Stds 2-5	324.1	317.1	318.6	317.6	319.3
Stds 6-8	229.0	232.2	232.4	232.3	226.6
Stds 9-10	134.7	141.6	142.9	142.9	144.1
Total	950.4	969.2	973.7	1014.1	969.8

TABLE 3.5

TOTAL	BASIC	BPP	JP/UP	PREP	INTEG
Preparatory	-	558.6	565.8	981.6	800.9
SSA-Std 1	4659.3	4068.8	3958.8	3971.1	3786.6
Junior Prim	4659.3	4645.7	4524.6	4952.7	4587.5
Stds 2-5	4471.3	4554.3	4343.5	4372.9	4188.9
Stds 6-8	2349.0	2408.7	2561.2	2601.2	2651.6
Stds 9-10	974.7	1001.9	1169.6	1181.6	1191.9
Total	12454.3	12610.6	12598.9	13108.4	12619.9

The Basic Projection brings all children aged 6-13 years into the school system, but 73% of the school population are in the primary school. The Bridging Period Programme (BPP) option increases the total school population by allowing the intake of some five-year-olds who are not school ready, but it does improve progress through the system slightly. The Junior Primary Upgrading (JP/UP) option considerably improves the number of coloured and African children who reach secondary school. Neither of these options admit children before age five-and-a-half.

The addition of a preprimary (PREP) year brings children into the school system at the age of five years, and the result is a fairly sharp increase in the school population. It benefits the school progress of coloured children in particular, whereas the Integrated (INTEG) option with better quality schooling for African children has a considerable impact on school progress and overall efficiency of the system (school enrolment drops).

Costs in the year 2000

The basic schooling costs are shown in Table 4 for the different options. Note that certain other 'non-school' costs have not been included, which cover universities and technikons, special education, adult education, and departmental administration (costs of inspectors and advisors are included).

TABLE 4: Capital and Recurrent Costs (in R millions) for the Junior Primary and Total Costs for each Level in the Year 2000

	BASIC	BPP	JP/UP	PREP	INTEG
Capital:					
Training	111.4	88.9	108.6	119.3	106.9
Building	116.1	91.3	95.1	104.3	92.0
Recurrent:					
Staff	5522.8	5630.1	7105.8	7758.7	9083.9
Materials	1115.4	1343.5	1816.9	1989.9	1887.3
Nutrition	-	-	-	-	296.8
Sub-totals:					
Prep-Std 1	6866	7154	9126	9972	11467
Stds 2-5	6856	6901	7433	7529	10062
Stds 6-8	6024	6248	6473	6627	6742
Stds 9-10	2700	2824	3402	3465	3503
TOTAL cost	22446	23127	26435	27593	31774
% total	30.6	30.9	34.5	36.1	36.0
Per capita:					
Junior prim	1474	1540	2017	2013	2500
Overall	1802	1834	2098	2105	2518

% total refers to the percentage of the total cost used for the junior primary school. Because of the increased enrolment to accommodate population growth and compulsory schooling for African children, the junior primary share of the school budget would have to increase from 28 per cent to 30.6 per cent in 2000. This also accounts for the overall increase in cost even though 1990 values are used.

The APEX model estimates an education budget available in the year 2000 of R20 871 000. The costs for the Basic Projection and the BPP option are easily covered with a parental contribution of 10% for primary school and 20% for secondary school.

Bridging Period Programme (BPP) option: As shown in the above table, the introduction of a preparatory programme within the first year of school would have a minimal effect on cost, increasing the proportion of the school budget spent on the junior phase from 30.6 to 30.9 per cent. There is an actual increase in the total school cost in the year 2000 of only 3 per cent over the basic compulsory schooling projection.

Junior Primary Upgrading (JP/UP) option: If the junior primary schools were also upgraded in terms of the Bophuthatswana model (PEUP), the share of the school budget would need to increase to about 34.5 per cent. While this represents quite a marked increase in the junior primary costs, it is only 14.3 per cent up from the BPP option (or 18% above the Basic Projection) on the whole school budget. The important gain is the probability of

considerably more African and coloured children achieving a secondary education so that the system is more efficient than at present. This also represents a significant attempt to redress inequalities in the school system.

There is a finance gap of nearly R2 billion, but according to Donaldson's figures, parental contributions are considerably higher than those allowed for in the APEX model. Costs would be covered by parental contributions covering 20% of the primary school costs and 25% of secondary school costs. Such contributions could be made in different ways and could be on a differential basis according to income.

Preprimary option: The introduction of separate preprimary classes for 80 per cent of all five-year-olds together with junior primary upgrading increases enrolment in the junior primary school by 425 000 and the proportion of the budget to 36.1 per cent. The overall costs do not change much (4.4% increase on JP/UP option) because most of the increase is at the junior primary level. The extra funds could be found by reducing the budget for 'non-school' costs from 20% to 17.5% (this budget currently includes existing preprimary expenses amounting to almost 1% of the total education budget).

The basic per capita cost (teacher salaries and a standard classroom allowance) of preprimary classes with a teacher-child ratio of 1:25 run by the House of Representative in 1990 was R1652 (calculated from the DEC Annual Report, 1990). Several options have been put forward for reducing the cost of preprimary classes in the short-term, but it is important that this be planned with constructive long-term goals in mind, and not simply on an ad hoc cost-saving basis. Per capita costing of double sessions (on a similar basis as the HoR costs) ranges from R429 to R943 depending on teacher qualifications. The lower level uses non-formally-trained 'community teachers'.

Integrated option: The 'preprimary programme' is included in this option but not as a separate year. The proportion of the school cost spent on junior primary does not increase (36%) in relation to the preprimary class option, but the overall costs go up quite considerably. Because of the difficulty of using APEX to cost this option, it is possible that the junior primary staff costs are too high. The major increase at the senior primary level which is due to reducing the pupil-teacher ratio in African schools and using more teachers with higher qualifications.

Because overall enrolment drops by about 500 000 pupils one expects less of a cost increase, but the 'equalisation' of standards across the board means that this option cannot be compared directly with others. It is clear that it would be difficult to finance this option at this standard. One of the trade-offs has been to have a high pupil-teacher ratio (35:1) at all levels except the junior primary.

School feeding schemes at primary schools in needy communities have only been provided for in the Integrated option at a total cost of R557 million. This provision could also be made in other options. In addition, a development policy targeting children in very disadvantaged communities would need to include:

- Subsidies for before- and after-school care and enrichment programmes organised by the school/community.

- Active parent involvement in their children's education, and community involvement in supporting and enriching children's learning opportunities outside the school.

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APPENDIX 1: APEX INPUTS FOR YEAR 2000

BASIC PROJECTION:

Capital costs		Primary	Secondary
Training:	Interns	30 000	40 000
	Unt--PQ1	10 000	10 000
	PQ1--PQ2	10 000	10 000
Classrooms		40 000	45 000

Recurrent costs		JP	SP	JS	SS
Salaries:	Intern	30 000	30 000	36 000	36 000
	Untrained	20 000	20 000	20 000	20 000
	PQ1	40 000	40 000	40 000	40 000
	PQ2	50 000	50 000	50 000	60 000
Classrooms		0.300	0.300	0.300	0.300
Texts		0.005	0.005	0.010	0.010
Administrators		30 000	30 000	30 000	30 000

Input mix	African Primary/secondary	Coloured	Indian	White
Pupils/teacher ratio	40/30	30/25	30/25	30/25
Staffing: % untrained	35/5	10/3	nil/nil	nil/nil
% PQ1	40/20	40/2	5/2	5/2
% PQ2	25/75	50/95	95/98	95/98
Pupils/classroom	45/35	35/35	35/35	35/35
Teachers/administrator	15	10	10	10
Texts/pupil	6/8	6/8	6/8	6/8
Ped.Exps/pupil	.20/35	.20/35	.20/35	.20/35
Health/nutrition	nil	nil	nil	nil
Teacher driven costs	.07	.07	.07	.07
Facilities/materials	.04	.04	.04	.04

OPTION 4: INTEGRATED JUNIOR PRIMARY SCHOOL

Input Mix	JP	SP	Sec
Pupils/teacher:	20	30	30
Staffing: % Underqual.	50	05	nil
% PQ1	30	35	20
% PQ2	20	60	80
Pupils/classroom	40	35	35
Teachers/administrator	10	10	10
Texts/pupil	8	8	8
Ped.Exps/pupil	.35	.35	.35
Teacher driven costs	.10	.07	.07
Facilities costs	.04	.04	.04
African children only			
Health & nutrition/pupil	.075	.075	.00

This last amount would be targeted to poor communities regardless of race, but stats for African will probably give about the right amount.

COMMUNITY-BASED EDUCARE PROGRAMME OPTIONS

Linda Biersteker and Eric Atmore

1. BACKGROUND INFORMATION

The general aim of educare provision is to promote the optimal development of young children and improve their quality of life in a comprehensive and holistic way through the empowerment of communities to provide better care and learning opportunities before school on as wide a scale as possible and to ensure that all children have a sound basic education.

A wide range of programmes has been developed to meet the varied needs of families for the care and education of young children. Programmes vary according to the following dimensions:

- **Location**: programmes may be centre-based or home-based or a combination of the two; others can function outdoors, in playgrounds or on street corners.
- **Degree of family involvement**: some services provide directly for children whereas others assist family members to provide better care and education in the home.
- **Age of the target children**: programmes for very young children (babies and todlers) tend to differ from those for older children.
- **Length and frequency of sessions**: full-day (8-12 hours) or half-day (4-6 hours) are most common but sessions may also be short (30 min - 2 hours); some involve daily attendance and others are held weekly, or two or three times a week.
- **Number**: programmes vary in size considerably, and some work on an individual basis.

Cost of educare provision vary considerably according to the above dimensions and also according to qualitative factors, particularly educational qualifications of staff and adult/child ratios. Given the vastness of the need for services we need to match user groups with the most cost-effective options to provide the greatest possible coverage.

2. METHOD

2.1. GENERAL PRACTICES

As community-based educare provision will vary according to localised needs, it is not possible to give a reliable computation of actual overall costs, particularly as universal provision is not necessarily the aim. Per capita costs have been computed for each programme option and the costs of servicing varying number within the 0 - 6 year old population can be calculated from the base figures.

The APEX model in its current form was not appropriate for this kind of calculation and a Lotus spreadsheet was designed by Nicolette Patchett for computing per capita costs.

In line with other NEPI costing work, the costings have been based on 1990 real rand values, with the year 2000 as the target by year by which policies would be fully operational.

To provide a comparative costing framework, recommended minimum, adequate and higher values have been computed for salaries and feeding and base rates for rental and services which vary according to programme size have been set. Salaries at the adequate level are based on the living wage figure for 1990 and at the higher level on salaries in white state supported pre-primary schools. In practice, salaries and feeding inputs tend to vary regionally and to be lower than those recommended here.

Running costs only have been included in the annual per capita figures though rental charges take in the capital cost of replacing a structure over an extended period.

Initial training costs are not included but support workers for ongoing support are costed for programmes being implemented by less highly qualified staff as a means of assisting them to operate at an adequate standard.

2.2 VALUES ON WHICH COSTINGS ARE BASED

Monthly Salaries Recommended for 1990			
	Minimum Start-up	Adequate	High
Principal M + 3/4 + specialisation	2700	3200	4000
Principal 8 + 2 + non formal 3	2000	2400	3000
Principal N3/Nonformal 2	1500	1800	2250
Teacher M + 3/4	1650	2000	2500
Teacher 8 + 2 / Nonformal 3	1450	1800	2250
Teacher N3 / Nonformal 2	1150	1400	1750
Teacher Nonformal 1	800	950	1200
Administrator	850	1000	1250
Home Educare Mother Nonformal 2	850	1000	1250
Home Educare Mother Nonformal 1	800	950	1200
Cook / Handyman	800	950	1200
Domestic/Gardener/Caretaker	670	800	1000
Support Workers			
Educare Adviser	2000	2400	-
Community Preschool Motivator	1150	1400	-
Home Educare Visitor Nonformal 3	1450	1800	-
Home Educare Visitor Nonformal 2	1150	1400	-

Note * Non-formal qualification levels refer to the Southern African Association for Early Childhood Educare (SAAECE) accredited course levels, which are equated to

formal levels.

- Support workers are not included in 'high' level options and salaries were not therefore listed.

Teacher-driven costs include staff benefits and ongoing in-service training.

Food Costs: Annual Food costs in rand are derived from Savage and Vena (1990). In 1990 based on an 11 month year these were:

	Minimum	Adequate	Higher
Snack	49.50	57.75	66.00
Lunch	156.75	165.00	189.75
Full feeding (breakfast, lunch, snacks)	264.00	297.00	330.00

Rental: This takes in the capital costs of providing the structure over a period of 20 years for buildings, wood and iron structures, prefabs and adapted shipping containers. The assumption is that this will cover replacement and or maintenance which will become necessary over that period. A range of possible capital costs for different types of structure is given in Appendix 1.

Administration: Includes transport, stationery, postage, cleaning materials etc.

Services: Includes electricity or other fuel, water, rates and telephone.

Equipment: This figure refers to the consumible supplies such as art materials and replacement of material as it wears out. It does not include the capital outlay of equipping a facility or programme from scratch. Estimated costs of completely equipping different programme types at a minimum level are included in Appendix 2.

2.3 COMPARATIVE STANDARDS

Detailed costing has been done for programmes at three different standards of implementation:

Minimum level: This refers to a 'start-up' level. It is intended that programmes work towards the adequate level but takes into account existing circumstances and the need for a fairly rapid increase in access to educare services.

Adequate level: This is the standard that all programmes should move towards.

Higher level: This reflects a standard common in 'first world' countries, though it is by no means the highest standard available. It is included for comparative purposes and not as a recommendation for South Africa where issues of increasing access take precedence.

3. COSTING OF DIFFERENT PROGRAMME OPTIONS

Descriptions of programme options, cost summaries and discussion points are given in this section. Detailed costing spreadsheets are given in Appendix 3.

3.1. FULL-DAY EDUCARE SERVICES

There are two main options for full-day educare services, which provide for the care and education of children of working parents at least 8 hours a day. The service includes full feeding.

a. Full-Day Educare Centre

Most educare centres cater for the 3 - 6 age group. The infant units for children aged 0 - 2 years and the 2 - 3 year old units are attached to those for 3 - 6 year olds and are not separate. They are presented separately in order to indicate the additional costs of caring for under-threes which relate to the greater number of adults required for these age-groups. The minimum to adequate levels which are most common are usually housed in community halls or even backyard structures and make use of non-formally trained staff. Support in the form of an educare advisor is built in for the minimum level but where staff are more highly qualified in the adequate and high option this falls away.

b. Home-Based Educare

A small group of children (up to six according to the Child Care Act, but less under some municipal by-laws) is cared for by a home mother/childminder in her own home. The option presented here is structured on an organised basis with support services to ensure that standards are met. This is done either by linking with an educare centre, a community or civic organisation or an association of not less than 10 homes. Because of its small scale and good adult/child ratio it is particularly suitable for the care of under-threes but is widely used for the whole 0 - 6 year age range.

Per Capita Costs of Full-day Educare Services at Different Standards and for Different Age Groups in Centre- or Home-Based Programmes

TYPES OF SERVICE	AGE	MINIMUM	ADEQUATE	HIGH
Centre-based	3 - 6	1 207	2 201	4 623
	2 - 3	1 503	2 620	5 571
	0 - 2	2 355	3 491	7 575
Home-based	0 - 6	2 288	2 877	5 621

It should be noted that the state provided white per capita subsidy of R4.66 per day of attendance in 1990 (or about R 1118 per year) is only sufficient to maintain the minimum standards costed here and to pay reasonsable wages to staff.

3.2 PART-DAY CHILD-ORIENTED SERVICES

These programme options focus on the need for some form of educational programme for young children. Nutritional supplementation will be necessary in disadvantaged communities and an additional R49.50 per annum per child would provide a minimal snack. However in chronically poor communities this would be insufficient, and at least two snacks at a cost of R99 is recommended.

a. Preprimary Classes

These classes for five year olds are attached to primary schools and run for the morning only. Costs have been included for a system of double sessions, where two groups of children are catered for in a day.

b. Preschool Centres

These are aimed at 3 - 6 years olds and run for four to six hours. The traditional preprimary school has operated for mornings only using tertiary trained teachers with ratios of about 1:22. Preschools, Early Learning Centres and Playgroups provide for the same service need without necessarily meeting the standards of the preprimary school and have been costed here as minimum and adequate levels.

c. Outdoor Playgroups

These are run by a trained parent playleader (paid) with the voluntary assistance of other parents and caters for 2 - 6 year olds. They operate either outdoors, under trees or canopies or in inprovised structures such as adapted shipping containers. Support and guidance is provided by a community preschool motivator. The costings provides for single sessions on a daily basis. Double costings are not included as the single session is run on a part-time salary and overheads are low. Assistance by volunteer parents makes for very favourable adult:child ratios (can be 1:8 or better) and provides family education opportunities. Parents and other members either assist as volunteers on a regular basis during playleader training or on a rotational basis.

Per Capita Costs of Selected Part-Day Programmes
(for Single and Double Sessions with additional Food costs in brackets)

Type of Programme		Minimum	Adequate	High
Preschool centres	Single	629 (679)	1622 (1680)	3872 (3938)
	Double	429 (479)	850 (908)	2016 (2082)
Pre-primary classes	Single	498 (548)	1385 (1443)	1735 (1801)
	Double	429 (479)	754 (812)	943 (1009)
Outdoor playgrounds	Single	330 (380)	533 (591)	- -

Double sessions could be a way of substantially increasing access without much increase to capital and operational costs. It becomes feasible for part-time options if programme length is kept to three hours or less. Attending less frequently would have a similar effect in reducing costs and needs to be explored.

3.3 FAMILY EDUCATION PROGRAMMES

The main purpose of these programmes is to help the child's main caregiver to provide better quality educare in the home. Options include work with individual caregiver and child pairs at home, group work including parents and children or parents only. Media programmes can be used in conjuction with these face-to-face methods. Three options which are practiced in South Africa are costed. As the target for the programme is the parent, the benefits are available to the family as a whole which substantially reduces the cost of the intervention. A per capita cost has been reached by assuming an average outreach of three chidren per family. A nutritional component needs to be built in for those children who require it.

a. Educational Home Visiting

This involves a weekly visit by a trained home-visitor to assist hte primary caregiver to provide a wider range of learning opportunities in the home. It is practiced for all ages but is especialy suitable for the 0 - 2 year age group. Health and nutritional programmes often make use of a home-visiting approach.

b. Parent-and-child groups

These combine a playgroup for children aged 2 - 6 years with a weekly group training and support session for their parents. Meeting together provides opportunities for children to play with one another, an important learning experience for this age group.

c. Parent Training Programmes

Weekly workshops and group discussions on how to assist young childrens early development and education takes place over a shorter period of time (about three months).

Per Capita Costs of Family Education Programmes with additional food costs in brackets

Type of Programme	Minimum	Adequate
Educational Home-visiting	165 (215)	301 (367)
Parent and Child groups	69 (119)	104 (170)
Parent Training Programmes	33	52

4. USING THE PROGRAMME COSTINGS DATA

The programme costings data (Appendix 3) can be used in to cost educare provision. The two main criteria which would be used are need and, working the other way, available state funding would determine what is possible. Using the programme data together with population projections (Appendix 4) some 1990 provision costs emerge.

1. Full day centre-based educare for all 3 - 6 year olds (3 235 334 children) at the different levels would cost

   Basic - R 3.9 billion
   Middle - R 7.1 billion
   High - R 14.9 billion

2. Full day home-based educare for all 0 - 3 year olds (3 434 810 children) at the different levels would cost

   Basic - R 7.86 billion
   Middle - R 9.88 billion
   High - R 19.3 billion

3. Full day centre and home-based educare for 30% of 0 - 6 year olds (2 001 043 children) at the different levels would cost

   Basic - R 3.52 billion
   Middle - R 5.1 billion
   High - R 10.26 billion

4. Community playgroups programme for all 3 - 6 year olds (4 361 358 children) at the differnt levels would cost

   Basic - R 1.44 billion
   Middle - R 2.32 billion

5. A combination of the above which is a more likely possibility, in which 30% full day centre and home-based educare for 0 - 6 year olds and 30% community playgroups is provided for all 2 - 6 year olds
   (4 002 086 children) at the different levels would cost

   Basic - R 3.95 billion
   Middle - R 5.80 billion
   High - R 11 billion

The above are a few examples of the funding necessary to sustain certain degrees of educare provision. The costing data provides a basis for policy makers to calculate the costs of whatever policies and programmes they decide to implement.

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CAPITAL COSTS IN COMMUNITY-BASED EDUCARE PROGRAMMES

COSTS OF DIFFERENT TYPES OF STRUCTURES IN 1990

Shipping container and adaptation costs	R 8 - 10 000
Wood and Iron Structure (60 sq. metres)	R 15 000
Prefabricated Structure	R 20 000
Upgrade of Existing Building	R 20 000
New Centre (80 children)	R 100 000

EQUIPMENT ESTABLISHMENT COSTS FOR DIFFERENT PROGRAMME OPTIONS

These are the minimum start-up level and have been computed from 1992 prices adjusted for inflation to give the 1990 rate.

	Full-day Educare Centre	Home-based Educare	Street Play-Groups	Parent Workshops
Number in a group	100	6	25	640
Large Equipment	R 6 000	R 200	R 100	R 600
Art Supplies	R 450	R 100	R 250	-
Educational Toys	R 200	R 60	R 160	R 160
Wooden Puzzle	R 120	R 50	R 120	-
Blocks	R 280	R 100	R 280	-
Books	R 255	R 90	R 155	R 240
Musical	R 25	R 15	R 25	-
Outdoor Equipment	R 1 000	R 25	-	-
Toilet Equipment	R 300	R 50	R 50	-
Kitchen Equipment	R 1 100	R 185	R 200	R 100
Sub-Total	R 9 730	R 875	R1340	R1100
Vat	R 973	R 88	R 134	R 110
Total @ 1992	R11 000	R 1000	R 1500	R 1200
After adjusting for inflation 1990 prices	R 9 000	R 800	R 1200	R 1000

COSTING SPREADSHEETS FOR DIFFERENT PROGRAMME OPTIONS

3-6 year olds

Program: FULL DAY EDUCARE CENTRE

BASE - 1990		BASIC	MIDDLE	HIGH
Proportion		0.4	0.4	0.4
Pupil/teacher ratio		20	15	10
%Principal -N1-N3	2	25.0%	0.0%	0.0%
%Educare Teacher - 1	10	75.0%	42.9%	0.0%
%Principal - M+3/4	0	0.0%	14.3%	10.0%
%Teacher 8+2 (pre)	4	0.0%	42.9%	50.0%
%Teacher M+3/4	3	0.0%	0.0%	40.0%
Cook/centre	12	1	1	1
Domestics/centre	13	1	1	1
Adviser/centre	14	0.05	0	0
Admin/centre	8	0.5	0.5	0.5
Pupils/centre		100	100	100
Teacher Driven		8.00%	12.00%	20.00%
RUNNING COSTS				
Principal -N1-N3	2	R1,500	R1,800	R2,250
Educare Teacher - 1	10	R800	R950	R1,200
Principal - M+3/4	0	R2,700	R3,200	R4,000
Teacher 8+2 (pre)	4	R1,450	R1,800	R2,250
Teacher M+3/4	3	R1,650	R2,000	R2,500
Cook	12	R800	R950	R1,200
Domestics	13	R670	R800	R1,000
Educare Adviser	14	R2,000	R2,400	R0
Administrators	8	R850	R1,000	R1,250
Services		R75	R300	R600
Rent		R200	R400	R800
Admin Expenses		R75	R150	R225
Educational Supplies		R1	R3	R5
Nutrition per pupil		R24.00	R27.00	R30.00
Total no of children		3104953	3104953	3104953
No of children in option		1241981	1241981	1241981
No of centres		12420	12420	12420
Total no of teachers		62099	82799	124198
TOTAL COSTS				
Total Salaries		R1,105,800,446	R2,197,647,207	R5,021,081,395
Educational Supplies		R13,661,793	R40,985,380	R68,308,966
Rent		R29,807,549	R59,615,098	R119,230,195
Nutrition		R327,883,037	R368,368,416	R409,853,796
Services		R11,177,831	R44,711,323	R89,422,646
Admin Expenses		R11,177,831	R22,355,662	R33,533,492
TOTAL		R1,499,508,486	R2,734,178,888	R5,741,430,491
PER CAPITA		R1,207	R2,201	R4,623

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2-3 year olds

Program: FULL DAY EDUCARE CENTRE

BASE - 1990		BASIC	MIDDLE	HIGH
Proportion		0.3	0.3	0.3
Pupil/teacher ratio		12	9	6
%Educare Teacher 1	10	100.0%	67.0%	40.0%
%Teacher 8+2 (pre)	4	0.0%	33.0%	40.0%
%Teacher M+3/4	3	0.0%	0.0%	20.0%
Cook/centre	12	0.33	0.33	0.33
Domestics/centre	13	0.33	0.33	0.33
Adviser/centre	14	0.05	0	0
Admin/centre	8	0.17	0.17	0.17
Pupils/centre		30	30	30
Teacher Driven		8.00%	12.00%	20.00%
RUNNING COSTS				
Educare Teacher 1	10	R800	R950	R1,200
Teacher 8+2 (pre)	4	R1,450	R1,800	R2,250
Teacher M+3/4	3	R1,650	R2,000	R2,500
Cook	12	R800	R950	R1,200
Domestics	13	R670	R800	R1,000
Adviser	14	R2,000	R2,400	R0
Administrator	8	R850	R1,000	R1,250
Services		R25	R100	R200
Rent		R70	R140	R280
Admin Expenses		R25	R50	R75
Educational Supplies		R1	R3	R5
Nutrition per pupil		R24	R27	R30
Total no of children		1083090	1083090	1083090
No of children in option		324927	324927	324927
No of centres		10831	10831	10831
Total no of teachers		27077	36103	54155
TOTAL COSTS				
Total Salaries		R383,439,854	R706,243,998	R1,612,937,638
Educational Supplies		R3,574,197	R10,722,591	R17,870,985
Rent		R9,097,956	R18,195,912	R36,391,824
Nutrition		R85,780,728	R96,503,319	R107,225,910
Services		R3,249,270	R12,997,080	R25,994,160
Admin Expenses		R3,249,270	R6,498,540	R9,747,810
TOTAL		R488,391,275	R851,161,440	R1,810,168,317
PER CAPITA		R1,503	R2,620	R5,571

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0-2 year olds

Program: FULL DAY EDUCARE CENTRE

BASE - 1990		BASIC	MIDDLE	HIGH
Proportion		0.2	0.2	0.2
Pupil/teacher ratio		6	6	4
%Educare Teacher 1	10	100.0%	67.0%	40.0%
%Teacher 8+2 (pre)	4	0.0%	33.0%	60.0%
Cook/centre	12	0.2	0.2	0.2
Domestics/centre	13	0.2	0.2	0.2
Adviser/centre	14	0.05	0	0
Admin/centre	8	0.1	0.1	0.1
Pupils/centre		20	20	20
Teacher Driven		8.00%	12.00%	20.00%
RUNNING COSTS				
Educare Teacher 1	10	R800	R950	R1,200
Teacher 8+2 (pre)	4	R1,450	R1,800	R2,250
Cook	12	R800	R950	R1,200
Domestics	13	R670	R800	R1,000
Adviser	14	R2,000	R2,400	R0
Administrator	8	R850	R1,000	R1,250
Services		R15	R60	R120
Rent		R40	R80	R160
Admin Expenses		R15	R30	R45
Educational Supplies		R1	R3	R5
Nutrition per pupil		R24	R27	R30
Total no of children		2251869	2251869	2251869
No of children in option		450374	450374	450374
No of centres		22519	22519	22519
Total no of teachers		75062	75062	112593
TOTAL COSTS				
Total Salaries		R918,038,351	R1,377,567,350	R3,150,274,656
Educational Supplies		R4,954,112	R14,862,335	R24,770,559
Rent		R10,808,971	R21,617,942	R43,235,885
Nutrition		R118,898,683	R133,761,019	R148,623,354
Services		R4,053,364	R16,213,457	R32,426,914
Admin Expenses		R4,053,364	R8,106,728	R12,160,093
TOTAL		R1,060,806,846	R1,572,128,831	R3,411,491,460
PER CAPITA		R2,355	R3,491	R7,575

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0-6 year olds

Program: HOME-BASED EDUCARE

BASE - 1990		BASIC	MIDDLE	HIGH
Proportion		0.1	0.1	0.1
Pupil/teacher ratio		6	6	4
%Educare Mother 1	9	100.0%	100.0%	0.0%
%Educare Mother 2	8	0.0%	0.0%	100.0%
Homes/Supervisor	14	150	50	0
Home/Visitor 1	11	20	15	0
Home/Visitor 3	4	0	0	20
Home/Relief Worker	9	0	0	10
Pupils/centre		6	6	4
Teacher Driven		8.00%	12.00%	12.00%
RUNNING COSTS				
Educare Mother 1	9	R800	R950	R1,200
Educare Mother 2	8	R850	R1,000	R1,250
Supervisor	14	R2,000	R2,400	R0
Educare Visitor 1	11	R800	R950	R1,200
Educare Visitor 3	4	R1,450	R1,800	R2,250
Relief Worker	9	R800	R950	R1,200
Services		R75	R75	R75
Rent		R0	R0	R0
Admin Expenses		R10	R10	R10
Educational Supplies		R1	R3	R5
Nutrition per pupil		R24	R27	R30
Total no of children		6439912	6439912	6439912
No of children in option		643991	643991	643991
No of centres		107332	107332	160998
Total no of teachers		107332	107332	160998
TOTAL COSTS				
Total Salaries		R1,187,004,580	R1,531,016,092	R3,207,848,965
Educational Supplies		R7,083,903	R21,251,710	R35,419,516
Rent		R0	R0	R0
Nutrition		R170,013,677	R191,265,386	R212,517,096
Services		R96,598,680	R96,598,680	R144,898,020
Admin Expenses		R12,879,824	R12,879,824	R19,319,736
TOTAL		R1,473,580,664	R1,853,011,692	R3,620,003,333
PER CAPITA		R2,288	R2,877	R5,621

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3-6 year olds

Program: PRE-PRIMARY SCHOOLS - SINGLE SESSION

BASE - 1990		BASIC	MIDDLE	HIGH
Proportion		0.2	0.2	0.2
Pupil/teacher ratio		30	20	13
%Principal N1-N3	2	25.0%	0.0%	0.0%
%Principal M+3/4	0	0.0%	25.0%	20.0%
%Teacher M+3/4	3	0.0%	0.0%	80.0%
%Teacher nonformal 2	5	0.0%	75.0%	0.0%
%Educare Teacher 1	10	75.0%	0.0%	0.0%
Centre/Adviser	14	20	0	0
Domestics/centre	13	1	1	1
Admin/centre	8	0.5	0.5	0.5
Pupils/centre		100	80	60
Teacher Driven		8.00%	12.00%	20.00%
RUNNING COSTS				
Principal N1-N3	2	R1,500	R1,800	R2,250
Principal M+3/4	0	R2,700	R3,200	R4,000
Teacher M+3/4	3	R1,650	R2,000	R2,500
Teacher nonformal 2	5	R1,150	R1,400	R1,750
Educare Teacher 1	10	R800	R950	R1,200
Educare Adviser	14	R2,000	R2,400	R0
Domestics	13	R670	R800	R1,000
Administrator	8	R850	R1,000	R1,250
Services		R75	R300	R600
Rent		R200	R400	R800
Admin Expenses		R75	R150	R225
Educational Supplies		R1	R3	R5
Nutrition per pupil		R0.00	R0.00	R0.00
Total no of children		3104953	3104953	3104953
No of children in option		620991	620991	620991
No of centres		6210	7762	10350
Total no of teachers		20700	31050	47769
TOTAL COSTS				
Total Salaries		R357,735,297	R907,639,861	R2,168,212,564
Educational Supplies		R6,830,897	R20,492,690	R34,154,483
Rent		R14,903,774	R37,259,436	R99,358,496
Nutrition		R0	R0	R0
Services		R5,588,915	R27,944,577	R74,518,872
Admin Expenses		R5,588,915	R13,972,289	R27,944,577
TOTAL		R390,647,799	R1,007,308,852	R2,404,188,992
PER CAPITA		R629	R1,622	R3,872

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3-6 year olds

Program: PRE-PRIMARY SCHOOLS - DOUBLE SESSION

BASE - 1990		BASIC	MIDDLE	HIGH
Proportion		0.2	0.2	0.2
Pupil/teacher ratio		60	40	26
%Principal N1-N3	2	25.0%	0.0%	0.0%
%Principal M+3/4	0	0.0%	25.0%	20.0%
%Teacher Level 2	5	0.0%	75.0%	0.0%
%Teacher M+3/4	3	0.0%	0.0%	80.0%
%Educare Teacher 1	10	75.0%	0.0%	0.0%
Centre/Adviser	14	30	0	0
Domestics/centre	13	1	1	1
Admin/centre	8	0.5	0.5	0.5
Pupils/centre		200	160	120
Teacher Driven		8.00%	12.00%	20.00%
RUNNING COSTS				
Principal N1-N3	2	R1,500	R1,800	R2,250
Principal M+3/4	0	R2,700	R3,200	R4,000
Teacher Level 2	5	R1,150	R1,400	R1,750
Teacher M+3/4	3	R1,650	R2,000	R2,500
Educare Teacher 1	10	R800	R950	R1,200
Educare Adviser	14	R2,000	R2,400	R0
Domestics	13	R670	R800	R1,000
Administrator	8	R850	R1,000	R1,250
Services		R110	R450	R900
Rent		R200	R400	R800
Admin Expenses		R150	R300	R450
Educational Supplies		R1	R3	R5
Nutrition per pupil		R0.00	R0.00	R0.00
Total no of children		3104953	3104953	3104953
No of children in option		620991	620991	620991
No of centres		3105	3881	5175
Total no of teachers		10350	15525	23884
TOTAL COSTS				
Total Salaries		R177,526,309	R453,819,930	R1,084,106,382
Educational Supplies		R6,830,897	R20,492,690	R34,154,483
Rent		R7,451,887	R18,629,718	R49,679,248
Nutrition		R0	R0	R0
Services		R4,098,538	R20,958,433	R55,889,154
Admin Expenses		R5,588,915	R13,972,289	R27,944,577
TOTAL		R201,496,546	R527,873,060	R1,251,773,744
PER CAPITA		R324	R850	R2,013

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5-6 year olds

Program: PRE-PRIMARY CLASSES - SINGLE SESSION

BASE - 1990		BASIC	MIDDLE	HIGH
Proportion		0.4	0.4	0.4
Pupil/teacher ratio		25	20	25
%Teacher M+3/4	3	0.0%	50.0%	100.0%
%Teacher nonformal 2	5	100.0%	50.0%	0.0%
Centre/Adviser	14	20	0	0
Pupils/centre		25	40	25
Teacher Driven		8.00%	12.00%	20.00%
RUNNING COSTS				
Teacher M+3/4	3	R1,650	R2,000	R2,500
%Teacher nonformal 2	5	R575	R1,400	R1,750
Educare Adviser	14	R2,000	R2,400	R0
Services		R60	R200	R125
Rent		R150	R300	R250
Admin Expenses		R75	R200	R125
Educational Supplies		R1	R3	R5
Nutrition per pupil		R0.00	R0.00	R0.00
Total no of children		3104953	3104953	3104953
No of children in option		1241981	1241981	1241981
No of centres		49679	31050	49679
Total no of teachers		49679	62099	49679
TOTAL COSTS				
Total Salaries		R434,594,062	R1,418,839,323	R1,788,452,928
Educational Supplies		R13,661,793	R40,985,380	R68,308,966
Rent		R89,422,646	R111,778,308	R149,037,744
Nutrition		R0	R0	R0
Services		R35,769,059	R74,518,872	R74,518,872
Admin Expenses		R44,711,323	R74,518,872	R74,518,872
TOTAL		R618,158,883	R1,720,640,754	R2,154,837,382
PER CAPITA		R498	R1,385	R1,735

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5-6 year olds

Program: PRE-PRIMARY CLASSES - DOUBLE SESSION

BASE - 1990		BASIC	MIDDLE	HIGH
Proportion		0.4	0.4	0.4
Pupil/teacher ratio		50	40	50
%Teacher M+3/4	3	0.0%	50.0%	100.0%
%Teacher nonformal 2	5	100.0%	50.0%	0.0%
Centre/Adviser	14	20	0	0
Pupils/centre		50	80	50
Teacher Driven		8.00%	12.00%	20.00%
RUNNING COSTS				
Teacher M+3/4	3	R1,650	R2,000	R2,500
%Teacher nonformal 2	5	R1,150	R1,400	R1,750
Educare Adviser	14	R2,000	R2,400	R0
Services		R90	R300	R200
Rent		R150	R300	R250
Admin Expenses		R150	R400	R250
Educational Supplies		R1	R3	R5
Nutrition per pupil		R0.00	R0.00	R0.00
Total no of children		3104953	3104953	3104953
No of children in option		1241981	1241981	1241981
No of centres		24840	15525	24840
Total no of teachers		24840	31050	24840
TOTAL COSTS				
Total Salaries		R402,401,909	R709,419,661	R894,226,464
Educational Supplies		R13,661,793	R40,985,380	R68,308,966
Rent		R44,711,323	R55,889,154	R74,518,872
Nutrition		R0	R0	R0
Services		R26,826,794	R55,889,154	R59,615,098
Admin Expenses		R44,711,323	R74,518,872	R74,518,872
TOTAL		R532,313,142	R936,702,221	R1,171,188,272
PER CAPITA		R429	R754	R943

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2-6 year olds

Program: OUTDOOR PLAYGROUPS - WITH MOTHERS

BASE - 1990		BASIC	MIDDLE
Proportion		0.05	0.05
Pupil/teacher ratio		25	25
%Educare Teacher Level 1	10	100.0%	0.0%
%Teacher N1-N3	5	0.0%	100.0%
Centre/CPM	15	10	10
Pupils/centre		25	25
Teacher Driven		8.00%	12.00%
RUNNING COSTS			
Educare Teacher Level 1	10	R400	R475
Teacher N1-N3	5	R575	R700
CPM	15	R863	R1,050
Services		R15	R15
Rent		R100	R100
Admin Expenses		R25	R25
Educational Supplies		R1	R3
Nutrition per pupil		R0.00	R0.00
Total no of children		4188043	4188043
No of children in option		209402	209402
No of centres		8376	8376
Total no of teachers		8376	8376
TOTAL COSTS			
Total Salaries		R52,784,419	R90,622,550
Educational Supplies		R2,303,424	R6,910,271
Rent		R10,051,303	R10,051,303
Nutrition		R0	R0
Services		R1,507,695	R1,507,695
Admin Expenses		R2,512,826	R2,512,826
TOTAL		R69,159,667	R111,604,645
PER CAPITA		R330	R533

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0-6 year olds

Program: PARENT CHILD GROUPS

BASE - 1990		BASIC	MIDDLE
Proportion		0.1	0.1
Parent/teacher ratio		80	80
CPM/centre	15	1	1
CPM/Support Worker	0	10	10
Parents/centre		80	80
Teacher Driven		8.00%	12.00%
RUNNING COSTS			
CPM/centre	15	R863	R1,050
Support Worker	0	R2,025	R2,400
Services		R15	R75
Rent		R0	R150
Admin Expenses		R150	R200
Educational Supplies		R1	R3
Nutrition per pupil		R0.00	R0.00
Total no of children		6439912	6439912
No of parents in option		321996	321996
No of centres		4025	4025
Total no of teachers		4025	4025
TOTAL COSTS			
Total Salaries		R55,553,901	R69,782,886
Educational Supplies		R3,541,952	R10,625,855
Rent		R0	R7,244,901
Nutrition		R0	R0
Services		R724,490	R3,622,451
Admin Expenses		R7,244,901	R9,659,868
TOTAL		R67,065,244	R100,935,961
PER PARENT		R208	R313

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0-6 year olds

Program: PARENT WORKSHOPS

BASE - 1990		BASIC	MIDDLE
Proportion		0.1	0.1
Parent/teacher ratio		480	320
Programmes/CPM - Level 2	14	0	1
Programmes/CPM - Level 1	15	1	0
CPM/Adviser - Level 1	1	10	0
CPM/Adviser Level 2	0	0	10
Parents/centre		480	320
Teacher Driven		8.00%	12.00%
RUNNING COSTS			
CPM - Level 2	14	R1,500	R1,800
CPM - Level 1	15	R863	R1,050
Adviser - Level 1	1	R1,500	R1,800
Adviser - Level 2	0	R2,025	R2,400
Services		R75	R75
Rent		R100	R100
Admin Expenses		R600	R400
Educational Supplies		R5	R5
Nutrition per pupil		R0.00	R0.00
Total no of children		6439912	6439912
No of parents in option		321996	321996
No of centres		671	1006
Total no of teachers		671	1006
TOTAL COSTS			
Total Salaries		R7,860,718	R25,220,088
Educational Supplies		R17,709,758	R17,709,758
Rent		R804,989	R1,207,484
Nutrition		R0	R0
Services		R603,742	R905,613
Admin Expenses		R4,829,934	R4,829,934
TOTAL		R31,809,140	R49,872,876
PER PARENT		R99	R155

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0-3 year olds

Program: EDUCATIONAL HOME VISITING

BASE - 1990		BASIC	MIDDLE
Proportion		0.4	0.4
Parent/Teacher ratio		28	28
%Educare Visitor Level 1	11	100.0%	0.0%
%Educare Visitor Level 2	7	0.0%	100.0%
Home Visitors/Advisers	14	15	10
Parents/Visitor		28	28
Teacher Driven		8.00%	12.00%
RUNNING COSTS			
Educare visitor Level 1	11	R800	R950
Educare Visitor Level 2	7	R1,150	R1,400
Educare Advisers	14	R2,000	R2,400
Services		R0	R0
Rent		R10	R15
Admin Expenses		R75	R100
Educational Supplies		R2.50	R6.00
Nutrition per pupil		R0.00	R0.00
Total no of children		3334959	3334959
No of parents in option		444661	444661
No of centres		15881	15881
Total no of teachers		15881	15881
TOTAL COSTS			
Total Salaries		R192,093,638	R350,037,297
Educational Supplies		R12,228,183	R29,347,639
Rent		R1,905,691	R2,858,536
Nutrition		R0	R0
Services		R0	R0
Admin Expenses		R14,292,681	R19,056,909
TOTAL		R220,520,194	R401,300,381
PER FAMILY		R496	R902

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APPENDIX 4

PROJECTED POPULATION FIGURES; 0 - 6 COHORT, YEARS 1990 - 2000

AGE COHORT	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
0 - 1	1141344	1158495	1158106	1194186	1212744	1231787	1253941	1276598	1299767	1323461	1347212
1 - 2	1110525	1130385	1150680	1171419	1192610	121426	1235049	1256299	1278023	1300234	1322939
2 - 3	1083090	1104331	1126024	1148177	1170802	1193909	1213913	1234362	1255265	1276628	1298464
3 - 4	1058138	1079841	1102009	1147785	1147785	1171414	1191108	1211236	1231806	1252824	1274304
4 - 5	1034772	1056354	1078407	1100938	1123960	1147483	1167209	1187363	1207957	1229000	1250500
5 - 6	1012043	1033246	1054918	1099711	1122853	1122853	1142815	1163209	1184048	1205339	1277092

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